EPSON PRODUCT SUPPORT BULLETIN

Date: 07/24/96
PSB No.: 1996.07.001
Reference: Product Specifications
Originator: JMV/CEB/LHT
Authorization:
Affected Product(s): FX-2170, LQ-2170, LQ-2070
Subject: Barcode Printing Commands

This bulletin explains the commands for printing barcodes.

Barcode Command:

Format: (ASCII)	*ESC*	*(*	*B*	*n1*	*n2*	*k*	*m*	*s*	*v1*	*v2*	*c*	Barcode data
(HEX)	*1Bh*	*28h*	*42h*	*n1*	*n2*	*k*	*m*	*s*	*v1*	*v2*	*c*	Barcode data
(Decimal)	*27*	*40*	*66*	*n1*	*n2*	*k*	*m*	*s*	*v1*	*v2*	*c*	Barcode data

Definition: n1 = (256 x n2) = 6 + Barcode data (6 bytes: k, m, s, v1, v2, c)

k = Barcode type

k (hex)	Barcode Type
00	EAN-13
01	EAN-8
02	Interleaved 2 of 5
03	UPC-A
04	UPC-E
05	Code 39
06	Code 128
07	POSTNET

m = module width

m	24-pin Printer (unit = 180 dpi)	9-pin Printer (unit = 120 dpi)
02 (default)	2 dot	2 dot
03	3 dot	3 dot
04	4 dot	4 dot
05	5 dot	5 dot

s = space adjustment value

24-pin Printer	-3 ≤ s ≤ 3 (unit 1/360 inch)
9-pin Printer	-3 ≤ s ≤ 3 (unit 1/120 inch)

v1 and *v2* = bar length

24-pin Printer	bar length = v1 + v2*256 (unit 1/180 inch)
9-pin Printer	bar length = v1 + v2*256 (unit 1/72 inch)

v1 and *v2* are ignored when POSTNET is selected.
Long bar length of POSTNET is always 0.125 inch.
Short bar length of POSTNET is always 0.050 inch.

c = the control flag

bit 0	check digit 0 = a check digit is not added by the printer 1 = a check digit is added by the printer
bit 1	human readable character 0 = the human readable characters are added by the printer 1 = the human readable characters are not added by the printer
bit 2	position of the flag character (for EAN-13 and UPC-A only) 0 = center 1 = under
bit 3	(reserved)
bit 4	(reserved)
bit 5	(reserved)
bit 6	(reserved)
bit 7	(reserved)

Barcode data:

The number data of each barcode type is constant.
The barcode is not printed if the number of barcode characters is incorrect.

Barcode Type	Number of valid characters 1	Number of valid characters 2
EAN-13	13	12
EAN-8	8	7
Interleaved 2 of 5	2 to 255	2 to 255
UPC-A	12	11
UPC-E	12 or 8	11 or 7
Code 39	1 to 255	1 to 255
Code 128	2 to 255	2 to 255
POSTNET	6 or 10 or 12	5 or 9 or 11

Numbers of valid characters 1: control flag c b0 = 0
Numbers of valid characters 2: control flag c b0 = 1

The number of valid characters for each barcode type is as shown below.
If invalid data is included in the barcode data string, the barcode is not printed.

Barcode Type	Number of valid characters 1 (Hex)
EAN-13	0 - 9 (30h - 39h)
EAN-8	0 - 9 (30h - 39h)
Interleaved 2 of 5	0 - 9 (30h - 39h)
UPC-A	0 - 9 (30h - 39h)
UPC-E	0 - 9 (30h - 39h)
Code 39	0 - 9 (30h - 39h), (41h - 5Ah), (20h, 24h, 25h, 2Bh, 2Dh, 2Eh, 2Fh)
Code 128	set A, set B, set C
POSTNET	0 - 9 (30h - 39h)

Data character set A:

Character	*HEX Code*	*Character*	*HEX Code*	*Character*	*HEX Code*	*Character*	*HEX Code*
NUL	x00	SUB	x1A	4	x34	N	x4E
0H	x01	ESC	x1B	5	x35	O	x4F
STX	x02	FS	x1C	6	x36	P	x50
EXT	x03	GS	x1D	7	x37	Q	x51
EOT	x04	RS	x1E	8	x38	R	x52
ENO	x05	US	x1F	9	x39	S	x53
ACK	x06	Space	x20	:	x3A	T	x54
BEL	x07	!	x21	;	x3B	U	x55
BS	x08	“	x22	<	x3C	V	x56
HT	x09	#	x23	=	x3D	W	x57
LF	x0A	$	x24	>	x3E	X	x58
VT	x0B	%	x25	?	x3F	Y	x59
FF	x0C	&	x26	@	x40	Z	x5A
CR	x0D	’	x27	A	x41	[	x5B
SO	x0E	(	x28	B	x42		x5C
SI	x0F	)	x29	C	x43	]	x5D
DLE	x10	*	x2A	D	x44	^	x5E
DC1	x11	+	x2B	E	x45	_	x5F
DC2	x12	,	x2C	F	x46	FNC 3	x60
DC3	x13	-	x2D	G	x47	FNC 2	x61
DC4	x14	.	x2E	H	x48	Shift	x62
NAK	x15	/	x2F	I	x49	Code C	x63
SYS	x16	0	x30	J	x4A	Code B	x64
ETB	x17	1	x31	K	x4B	FNC 4	x65
CAN	x18	2	x32	L	x4C	FNC 1	x66
EM	x19	3	x33	M	x4D		

Data character set B:

Character	*HEX Code*	*Character*	*HEX Code*	*Character*	*HEX Code*	*Character*	*HEX Code*
		2	x32	L	x4C	f	x66
FNC 3	x19	3	x33	M	x4D	g	x67
FNC 2	x1A	4	x34	N	x4E	h	x68
Shift	x1B	5	x35	O	x4F	I	x69
Code C	x1C	6	x36	P	x50	j	x6A
FNC 4	x1D	7	x37	Q	x51	k	x6B
Code A	x1E	8	x38	R	x52	l	x6C
FNC 1	x1F	9	x39	S	x53	m	x6D
Space	x20	:	x3A	T	x54	n	x6E
!	x21	;	x3B	U	x55	o	x6F
“	x22	<	x3C	V	x56	p	x70
#	x23	=	x3D	W	x57	q	x71
$	x24	>	x3E	X	x58	r	x72
%	x25	?	x3F	Y	x59	s	x73
&	x26	@	x40	Z	x5A	t	x74
’	x27	A	x41	[	x5B	u	x75
(	x28	B	x42	\	x5C	v	x76
)	x29	C	x43	]	x5D	w	x77
*	x2A	D	x44	^	x5E	x	x78
+	x2B	E	x45	_	x5F	y	x79
,	x2C	F	x46	(blank)	x60	z	x7A
-	x2D	G	x47	a	x61	{	x7B
.	x2E	H	x48	b	x62	|	x7C
/	x2F	I	x49	c	x63	}	x7D
0	x30	J	x4A	d	x64	~	x7E
1	x31	K	x4B	e	x65	DEL	x7F

Data character set C:

Character	*HEX Code*	*Character*	*HEX Code*	*Character*	*HEX Code*	*Character*	*HEX Code*
0	x3030	26	x3236	52	x3532	78	x3738
1	x3031	27	x3237	53	x3533	79	x3739
2	x3032	28	x3238	54	x3534	80	x3830
3	x3033	29	x3239	55	x3535	81	x3831
4	x3034	30	x3330	56	x3536	82	x3832
5	x3035	31	x3331	57	x3537	83	x3833
6	x3036	32	x3332	58	x3538	84	x3834
7	x3037	33	x3333	59	x3539	85	x3835
8	x3038	34	x3334	60	x3630	86	x3836
9	x3039	35	x3335	61	x3631	87	x3837
10	x3130	36	x3336	62	x3632	88	x3838
11	x3131	37	x3337	63	x3633	89	x3839
12	x3132	38	x3338	64	x3634	90	x3930
13	x3133	39	x3339	65	x3635	91	x3931
14	x3134	40	x3430	66	x3636	92	x3932
15	x3135	41	x3431	67	x3637	93	x3933
116	x3136	42	x3432	68	x3638	94	x3934
17	x3137	43	x3433	69	x3639	95	x3935
18	x3138	44	x3434	70	x3730	96	x3936
19	x3139	45	x3435	71	x3731	97	x3937
20	x3230	46	x3436	72	x3732	98	x3938
21	x3231	47	x3437	73	x3733	99	x3939
22	x3232	48	x3438	74	x3734	Code B	x3A
23	x3233	49	x3439	75	x3735	Code A	x3B
24	x3234	50	x3530	76	x3736	FNC 1	x3C
25	x3235	51	x3531	77	x3737		

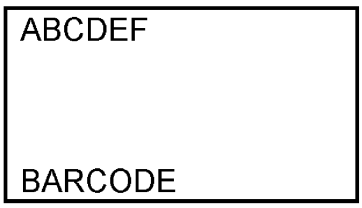
Barcode print conditions:

1. Barcode printing is always performed uni-directionally.

2. The barcode is not printed if any part of the barcode is beyond the right margin.

3. If barcode and text data are mixed on the same line, the results will be as shown below. Example:

   Text data: “ABC”
   Barcode data:
   Text data: “DEF”

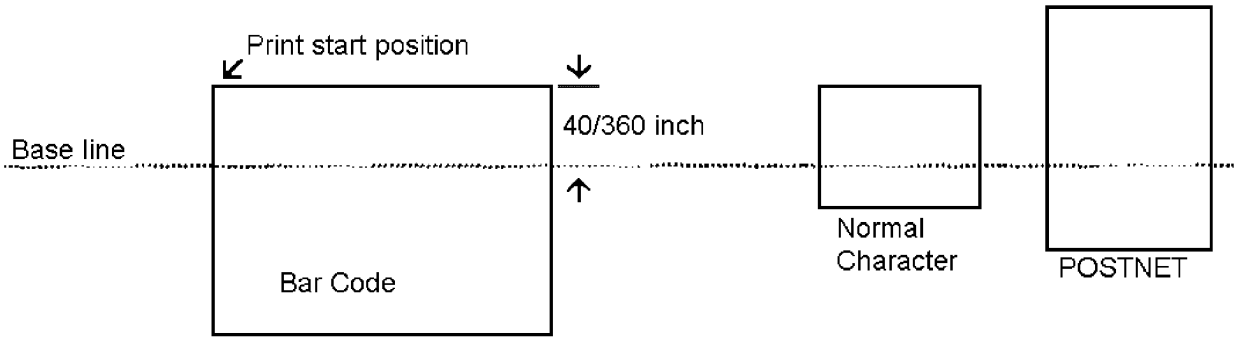


4. The start and stop (*) characters of Code 39 are added to readable characters.

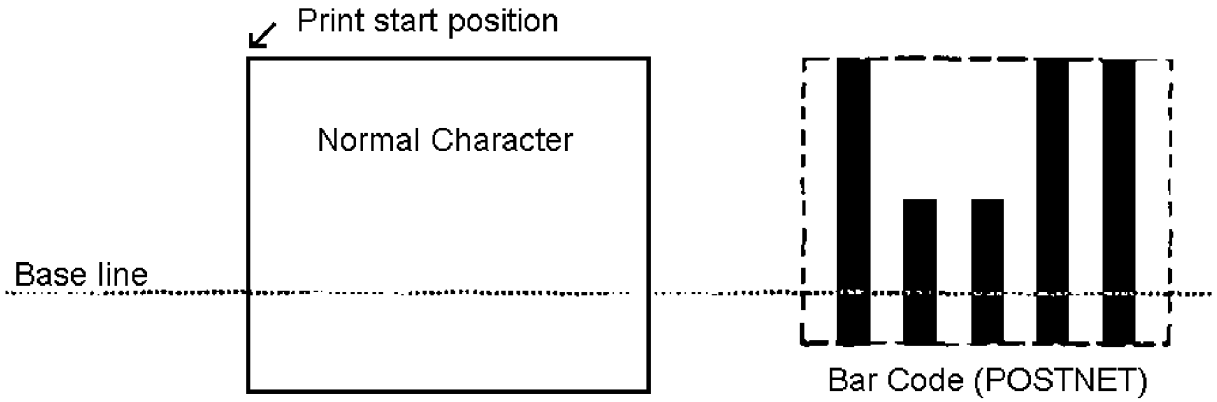
5. When using barcode type 128, the first character identifies the character set being used.
   Example: 41(A), or 42 (B), or 43(C)

6. When either barcode type 128 or Interleaved 2 of 5 are selected and the number of characters are odd, a "0" must be added to the data string.

7. The print starting position is 40/360 in. above the base line (except in POSTNET.)



8. Barcode print start position for POSTNET



Sample of POSTNET Barcode GWBASIC Program:

```
10      OPEN "LPT1:" AS #1
20      CONSOLE ,,,,1
30      ESC$=CHR$(&H1B)
40      PRINT #1, ESC;"@";
50      PRINT #1, "<POSTNET CHECK>----------------------------------------"
60      K=7 : N=12+6
70      PRINT #1, "   Long Bar 24/180 inch     Short Bar 8/180 inch"
80      PRINT #1, "   Check Debit HOST"
90      PRINT #1, "   DATA = 012345678901"
100     FOR M=2 TO 5
110     FOR S=0 TO 6
120     IF S=0 THEN I=&HFD
130     IF S=1 THEN I=&HFE
140     IF S=2 THEN I=&HFR
150     IF S=3 THEN I=0
160     IF S=4 THEN I=1
170     IF S=5 THEN I=2
180     IF S=6 THEN I=3
190     PRINT #1, "     Module Width = ";M;
200     PRINT #1, "     Space Adjust = ";I
210     PRINT #1, CHR$(27); "(B"; CHR$(N); CHR$(0); CHR$(K); CHR$(M); CHR$(I);
        CHR$(180); CHR$(0); CHR$(0);
220     IF K=7 THEN PRINT #1, "012345678901";
230     PRINT #1, :PRINT #1
240     NEXT S
250     NEXT M
260     CLOSE #1
```